

Serial No.: 10/084,115

Filing Date: 2/25/2002

Attorney Docket No. 100.255US01

Title: DISTRIBUTED AUTOMATIC GAIN CONTROL SYSTEM

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**REMARKS**

Applicant has reviewed the Office Action mailed on May 19, 2006 as well as the art cited. Claims 1-36 are pending in this application.

*Summary of Examiner Interview*

The Applicants' representatives, David Fogg (Registration Number 35,138) and Jay Wahlquist (Registration Number 55,705) thank Examiner Nguyen for the opportunity to discuss aspects of this case in a telephone interview on June 29, 2006.

The pending claims were discussed with respect to the Examiner's rejection of these claims under 35 U.S.C. §103(a) as being unpatentable over Kintis. During the interview, the Applicant's representatives asserted that Kintis failed to teach the processing of upstream supported and non-supported signals in remote units. Applicant's representative asserted that the language "to receive wireless signals" in claim 1 covers receipt of "supported and non-supported signals." An amendment to the claims clarifying this inherent limitation was also discussed.

The Applicant's representatives believe that the substance and scope of the personal interview of June 29, 2006 is accurately captured in the summary above and the arguments below.

*Rejections Under 35 U.S.C. § 103*

Claims 1-36 were rejected under 35 USC § 103(a) as being unpatentable over Kintis et al., (U.S. Patent No. 6,535,720). Applicant respectfully traverses this rejection.

**Claim 1:**

Claim 1 is directed to a wireless distribution system. The wireless distribution system comprises a plurality of remote units distributed in a coverage area to receive upstream supported and non-supported wireless signals; a plurality of input ports to receive signals comprising the wireless signals provided by the plurality of remote units, a plurality of input power monitors operatively connected to one or more of the plurality of input ports to determine power levels of

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signals received at the input ports, a plurality of variable gain controllers to control the gain of signals received at the one or more of the plurality of input ports in response to a plurality of corresponding control signals, a node to combine a plurality of signals from the plurality of input ports, and a controller to provide the plurality of corresponding control signals to individually control each of the variable gain controllers.

Applicant asserts that nothing in Kintis teaches or suggests “a plurality of remote units distributed in a coverage area to receive *upstream supported and non-supported* wireless signals.” Furthermore, Applicant asserts that one of skill in the art would not be motivated to modify Kintis to include the above limitation. Therefore, claim 1 is patentable over Kintis and Applicant requests that the rejection be withdrawn.

Claims 2 -11 depend directly or indirectly from claim 1 and, thus, are allowable at least for the reasons stated above with respect to claim 1. Applicant requests, therefore, that the Examiner withdraw the rejections.

**Claim 12:**

Claim 12 is directed to a method for controlling the signal levels of a wireless distribution system. The method comprises receiving upstream supported and non-supported wireless signals at a plurality of remote units distributed in a coverage area; providing signals from the remote units to a plurality of input ports; monitoring input power levels of the signals received at one or more of the plurality of input ports; combining signals from the plurality of input ports at a node; determining individual control signals for each of the input ports based on a weighting function that is proportional to the monitored input power levels such that the combined power does not exceed a predetermined level, and gain controlling the signals received at the input ports in response to the control signals.

Applicant asserts that nothing in Kintis teaches or suggests “receiving *upstream supported and non-supported* wireless signals at a plurality of remote units distributed in a coverage area.” Furthermore, Applicant asserts that one of skill in the art would not be

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motivated to modify Kintis to include the above limitation. Therefore, claim 12 is patentable over Kintis and Applicant requests that the rejection be withdrawn.

Claims 13 depends directly from claim 12 and, thus, is allowable for at least the reasons stated above with respect to claim 12. Applicant, therefore, requests that the Examiner withdraw the rejection.

**Claim 14:**

Claim 14 is directed to a method for controlling the signal levels of a wireless distribution system. The method comprises receiving upstream supported and non-supported wireless signals at a plurality of remote units distributed in a coverage area; providing signals from the remote units to a plurality of input ports; monitoring the input power level of the signals received at each of the input ports; controlling the gain of the signals received at each of the input ports in response to a control signal; combining the signals from the plurality of input ports at a node; monitoring power levels of the combined signals; determining weights for a weighting function that is proportional to power received at each input port, as determined by the input power monitors such that the power of the combined signals does not exceed a predetermined level; and providing the control signals to each input port based on the weighting function.

Applicant asserts that nothing in Kintis teaches or suggests “receiving *upstream supported and non-supported* wireless signals at a plurality of remote units distributed in a coverage area.” Furthermore, Applicant asserts that one of skill in the art would not be motivated to modify Kintis to include the above limitation. Therefore, claim 14 is patentable over Kintis and Applicant requests that the rejection be withdrawn.

**Claim 15:**

Claim 15 is directed to a wireless distribution system. The wireless distribution comprises a plurality of remote units distributed in a coverage area to receive upstream supported and non-supported wireless signals and to provide the wireless signals through the distribution system to one or more input ports; a plurality of input power monitors operatively connected to

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the one or more input ports to determine power levels of the wireless signals received at the input port; and a plurality of variable gain controllers to control the gain of the wireless signals received at the one or more input ports based on a predetermined threshold wherein a saturation level is not reached.

Applicant asserts that nothing in Kintis teaches or suggests “a plurality of remote units distributed in a coverage area to receive *upstream supported and non-supported* wireless signals.” Furthermore, Applicant asserts that one of skill in the art would not be motivated to modify Kintis to include the above limitation. Therefore, claim 15 is patentable over Kintis and Applicant requests that the rejection be withdrawn.

**Claim 16:**

Claim 16 is directed to a wireless distribution system. The wireless distribution system comprises a plurality of remote units distributed in a coverage area to receive upstream supported and non-supported wireless signals and to provide the wireless signals through the distribution system to one or more input ports; a plurality of input power monitors operatively connected to one or more of the input ports to determine power levels of the wireless signals received at the input ports; a plurality of variable gain controllers to control the gain of the wireless signals received at one or more of the input ports; a node to combine the wireless signals from the plurality of input ports; a combined power monitor to determine a power level of the signals combined at the node; and a controller to provide control signals to control one or more of the variable gain controllers so that an overflow condition does not occur at the node.

Applicant asserts that nothing in Kintis teaches or suggests “a plurality of remote units distributed in a coverage area to receive *upstream supported and non-supported* wireless signals.” Furthermore, Applicant asserts that one of skill in the art would not be motivated to modify Kintis to include the above limitation. Therefore, claim 16 is patentable over Kintis and Applicant requests that the rejection be withdrawn.

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Claim 17 depends directly from claim 16 and, thus, is allowable for at least the reasons stated above with respect to claim 16. Applicant, therefore, requests that the Examiner withdraw the rejection.

**Claim 18:**

Claim 18 is directed to a method for controlling the signal levels of a wireless distribution system. The method comprises receiving a spectrum of upstream supported and non-supported wireless signals at a plurality of remote units distributed in a coverage area; digitizing the received signals; transmitting the digitized signals over one or more transmission links to a plurality of input ports operatively connected to a node where the signals are combined; monitoring input power levels of the signals received at one or more of the plurality of input ports; monitoring the combined power level of the signals combined at the node; determining individual control signals for controlling the signal levels of each of the input ports based on a weighting function that is proportional to the monitored input power levels such that the combined power as determined by the combined power monitor does not exceed a predetermined level, and attenuating the signals received at each of the input ports in response to the control signals.

Applicant asserts that nothing in Kintis teaches or suggests “receiving a spectrum of *upstream supported and non-supported* wireless signals at a plurality of remote units distributed in a coverage area.” Furthermore, Applicant asserts that one of skill in the art would not be motivated to modify Kintis to include the above limitation. Therefore, claim 18 is patentable over Kintis and Applicant requests that the rejection be withdrawn.

Claims 19-22 depend directly or indirectly from claim 18 and, thus, are allowable for at least the reasons stated above with respect to claim 18. Applicant, therefore, requests that the Examiner withdraw the rejections.

**Claim 23:**

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Claim 23 is directed to a digital expansion unit. The digital expansion unit comprises a plurality of input ports to receive signals comprising upstream supported and non-supported signals from a plurality of digital remote units distributed in a coverage area; a node to digitally combine signals from the input ports; a plurality of input power monitors operatively connected to one or more of the input ports to determine the level of signals received at the input ports, a plurality of gain controllers to adjust the gain of signals received at some or all of the input ports; a combined power monitor to determine the combined signal level of signals combined at the node; and a controller to provide control signals to control one or more of the gain controllers wherein an overflow condition is avoided for signals combined at the node.

Applicant asserts that nothing in Kintis teaches or suggests “a plurality of input ports to receive signals comprising *upstream supported and non-supported* signals from a plurality of digital remote units distributed in a coverage area.” Furthermore, Applicant asserts that one of skill in the art would not be motivated to modify Kintis to include the above limitation. Therefore, claim 23 is patentable over Kintis and Applicant requests that the rejection be withdrawn.

**Claim 24:**

Claim 24 is directed to a wireless distribution system. The wireless distribution system comprises one or more digital expansion units, the digital expansion units comprising: a plurality of input ports to receive signals comprising upstream supported and non-supported signals from a plurality of digital remote units distributed in a coverage area; a node to digitally combine signals from the input ports; a plurality of input power monitors operatively connected to one or more of the input ports to determine the level of signals received at the input ports, a plurality of gain controllers to adjust the gain of signals received at some or all of the input ports; a combined power monitor to determine the combined signal level of signals combined at the node; and a controller to provide control signals to control one or more of the gain controllers wherein an overflow condition is avoided for signals combined at the node.

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Applicant asserts that nothing in Kintis teaches or suggests “a plurality of input ports to receive signals comprising *upstream supported and non-supported* signals from a plurality of digital remote units distributed in a coverage area.” Furthermore, Applicant asserts that one of skill in the art would not be motivated to modify Kintis to include the above limitation. Therefore, claim 24 is patentable over Kintis and Applicant requests that the rejection be withdrawn.

**Claim 25:**

Claim 25 is directed to a wireless distribution system. The wireless distribution system comprises a plurality of remote units distributed in a coverage area to receive upstream supported and non-supported wireless signals in the coverage area; a node to combine a plurality of wireless signals from one or more of the plurality of remote units; a power monitor to determine a power level of the wireless signals combined at the node; and a variable gain controller to control the gain of the signals combined at the node.

Applicant asserts that nothing in Kintis teaches or suggests “a plurality of remote units distributed in a coverage area to receive *upstream supported and non-supported* wireless signals in the coverage area.” Furthermore, Applicant asserts that one of skill in the art would not be motivated to modify Kintis to include the above limitation. Therefore, claim 25 is patentable over Kintis and Applicant requests that the rejection be withdrawn.

Claims 26-31 depend directly or indirectly from claim 25 and, thus, are allowable for at least the reasons stated above with respect to claim 25. Applicant, therefore, requests that the Examiner withdraw the rejections.

**Claim 32:**

Claim 32 is directed to a method for controlling the signal levels of a wireless distribution system. The method comprises receiving a spectrum of upstream supported and non-supported wireless signals at a plurality of remote units distributed in a coverage area; digitizing the received signals; transmitting the digitized signals over one or more transmission links to a node

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Claims 33-36 depend directly or indirectly from claim 32 and, thus, are allowable for at least the reasons stated above with respect to claim 32. Applicant, therefore, requests that the Examiner withdraw the rejections.

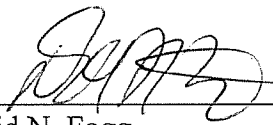
**CONCLUSION**

Applicant respectfully submits that claims **1-36** are in condition for allowance and notification to that effect is earnestly requested. If necessary, please charge any additional fees or credit overpayments to Deposit Account No. 502432.

If the Examiner has any questions or concerns regarding this application, please contact the undersigned at 612-455-1680.

Respectfully submitted,

Date: August 11, 2006

  
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David N. Fogg  
Reg. No. 35,138

Attorneys for Applicant  
Fogg and Associates, LLC  
P.O. Box 581339  
Minneapolis, MN 55458-1339  
T – (612) 332-4720  
F – (612) 332-4731